Amendments to the Claims:

This listing of the claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1 (Previously Presented): The multiple layer structure as in claim 4, wherein said second crystalline layer provides one of said first and third crystalline layers with a stronger out-of-plane preferred growth orientation than if each of said first and third crystalline layers are in overlying contact.

2 (Previously Presented): The multiple layer structure as in claim 4, wherein:

(a) said first crystalline layer has a first, closest packed plane, nearest neighbor atomic spacing;

(b) said second crystalline layer has a second, closest packed plane, nearest neighbor atomic spacing; and

(c) said third crystalline layer has a third closest packed plane, nearest neighbor atomic spacing, wherein:

said first and said third closest packed plane, nearest neighbor atomic spacings are different; and

the atomic spacing mismatch between said second closest packed plane, nearest neighbor atomic spacing of said second crystalline layer and the closest packed plane, nearest neighbor atomic spacing of one of said first and third crystalline layers is less than the mismatch between the closest packed plane, nearest neighbor atomic spacings of said first and third crystalline layers, whereby:

said third crystalline layer in overlying contact with said second crystalline layer has a stronger preferred out-of-plane growth orientation than if said third crystalline layer is in overlying contact with said first crystalline layer.

3 (Previously Presented): The multiple layer structure as in claim 2, wherein:

said third crystalline layer in overlying contact with said second crystalline layer has a stronger preferred hexagonal close-packed (*hcp*) <0002> out-of-plane growth orientation than if said third crystalline layer is in overlying contact with said first crystalline layer.

4 (Previously Presented): A multiple layer structure comprising in overlying, contacting sequence:

a first crystalline layer comprising a first *fcc* material having a <111> preferred growth orientation and a first {111} lattice parameter;

a second crystalline layer comprising a second *fcc* material having a <111> preferred growth orientation and a second {111} lattice parameter different from said first {111} lattice parameter; and

a third crystalline layer comprises an *hcp* material having a <0002> preferred growth orientation and a {0002} lattice parameter more closely matched to said second {111} lattice parameter than to said first {111} lattice parameter, wherein:

said first *fcc* material is selected from the group consisting of: Ag, Au, Pt, Pd, Al, Rh, Ir, Pb, Ca, Sr, Yb, and alloys based thereon;

said second *fcc* material is selected from the group consisting of: Ag, Cu, Au, Ni, Pt, Pd, Al, Rh, Ir, Pb, Ca, Sr, Yb, and alloys based thereon; and

said *hcp* material is selected from the group consisting of: Ru, Ti, Co, Re, Be, Mg, Sc, Zn, Se, Zr, Cd, Te, La, Hf, Os, Tl, Pr, Nd, Gd, Tb, Dy, Ho, Er, Tm, Lu, Y, and alloys based thereon.

5 (Previously Presented): The multi-layer structure as in claim 4, wherein:

said first crystalline layer is from about 1 to about 1,000 nm thick;

said second crystalline layer is from about 1 to about 50 nm thick; and

said third crystalline layer is from about 1 to about 50 nm thick.

6-11 (Canceled)

12 (Withdrawn): A perpendicular magnetic recording medium, comprising the multiple layer structure of claim 3 and a perpendicular magnetic recording layer comprising a magnetic material with a strong preferred *hcp* <0002> or *fcc* <111> out-of-plane growth orientation in overlying contact with said third crystalline layer.

13 (Withdrawn): The perpendicular magnetic recording medium as in claim 12, wherein:

said perpendicular magnetic recording layer comprises at least one magnetic material with a strong *hcp* <0002> out-of-plane growth orientation, selected from the group consisting of: Co-based alloys, CoCrPt(SiO_2), other CoPtO-containing alloys, CoCrPtB, other CoCrPt-containing alloys, and other Co-based alloys, or at least one magnetic material with a strong *fcc* <111> out-of-plane growth orientation, selected from the group consisting of a multi-layer superlattice structure including a bi-layer comprising a Co-based alloy layer and a layer including at least one of Pt and Pd, a multi-layer superlattice structure including a bi-layer comprising an Fe-based alloy layer and a layer including at least one of Pt and Pd, and an L_{10} structure selected from FePt, CoPt, FePd, and CoPd materials with and without at least one alloying element.

14 (Withdrawn - Currently Amended): A perpendicular magnetic recording medium, comprising:

(a) a non-magnetic substrate having a surface;

(b) a layer stack formed over said substrate surface, said layer stack comprising, in overlying sequence from said substrate surface:

(i) a magnetically soft underlayer;

(ii) a multiple layer interlayer structure for strengthening a preferred out-of-plane growth orientation of a layer of a perpendicular magnetic recording material formed thereon; and

(iii) a perpendicular magnetic recording layer having a strong preferred *hcp* <0002> or *fcc* <111> out-of-plane growth orientation;

wherein said multiple layer interlayer structure comprises, in overlying, contacting sequence from a surface of said magnetically soft underlayer:

(1) a first crystalline layer of a material having a first crystal structure, a first preferred growth orientation and a first, closest packed plane, nearest neighbor atomic spacing;

(2) ~~a said intermediate layer in the form of~~ a second crystalline layer of a material having a second crystal structure, a second preferred growth orientation, and a second, closest packed plane, nearest neighbor atomic spacing; and

(3) a third crystalline layer of a material having a third crystal structure, a third preferred growth orientation, and a third closest packed plane, nearest neighbor atomic spacing, wherein:

(I) said first and said third crystal structures are different;

(II) said first and said third closest packed plane, nearest neighbor atomic spacings are different;

(III) said second crystal structure is of the same type as ~~one of~~ said first ~~and said third~~ crystal ~~structures~~ structure; and

(IV) the atomic spacing mismatch between said second closest packed plane, nearest neighbor atomic spacing of said second crystalline[[ ]] layer and the closest packed plane, nearest neighbor atomic spacing of ~~one of said first and third crystalline layers having a crystal structure different from that of said second crystalline layer~~ said third crystalline layer is less than the mismatch between the closest packed plane, nearest neighbor atomic spacings of said first and third crystalline layers, whereby:

said third crystalline layer in overlying contact with said second crystalline layer has a stronger preferred out-of-plane growth orientation than if said third crystalline layer is in overlying contact with said first crystalline layer;

the first crystalline layer comprising a first *fcc* material having a <111> preferred growth orientation and a first {111} lattice parameter;

the second crystalline layer comprising a second *fcc* material having a <111> preferred growth orientation and a second {111} lattice parameter different from said first {111} lattice parameter; and

the third crystalline layer comprises an *hcp* material having a <0002> preferred growth orientation and a {0002} lattice parameter more closely matched to said second {111} lattice parameter than to said first {111} lattice parameter, wherein:

said first *fcc* material is selected from the group consisting of: Ag, Au, Pt, Pd, Al, Rh, Ir, Pb, Ca, Sr, Yb, and alloys based thereon;

said second *fcc* material is selected from the group consisting of: Ag, Cu, Au, Ni, Pt, Pd, Al, Rh, Ir, Pb, Ca, Sr, Yb, and alloys based thereon; and

said *hcp* material is selected from the group consisting of: Ru, Ti, Co, Re, Be, Mg, Sc, Zn, Se, Zr, Cd, Te, La, Hf, Os, Tl, Pr, Nd, Gd, Tb, Dy, Ho, Er, Tm, Lu, Y, and alloys based thereon.

15 (Withdrawn - Currently Amended): The recording medium as in claim 14, wherein:

said third crystalline layer in overlying contact with said second crystalline layer has a stronger preferred hexagonal close-packed (*hcp*) <0002> ~~or face-centered cubic (*fcc*) <111>~~ out-of-plane growth orientation than if said third crystalline layer is in overlying contact with said first crystalline layer.

16 (Canceled)

17 (Withdrawn - Currently Amended): The recording medium as in claim [[16]] 15, wherein:

said first crystalline layer is from about 1 to about 1,000 nm thick ~~and comprised of a first *fcc* material selected from the group consisting of: Ag, Cu, Au, Ni, Pt, Pd, Al, Rh, Ir, Pb, Ca, Sr, Yb, and alloys based thereon~~;

said second crystalline layer is from about 1 to about 50 nm thick ~~and comprised of a second *fcc* material selected from the group consisting of: Ag, Cu, Au, Ni, Pt, Pd, Al, Rh, Ir, Pb, Ca, Sr, Yb, and alloys based thereon~~; and

said third crystalline layer is from about 1 to about 50 nm thick ~~and comprised of an *hcp* material selected from the group consisting of: Ru, Ti, Co, Re, Be, Mg, Sc, Zn, Se, Zr, Cd, Te, La, Hf, Os, Tl, Pr, Nd, Gd, Tb, Dy, Ho, Er, Tm, Lu, Y, and alloys based thereon~~.

18-23 (Canceled)

24 (Withdrawn): The recording medium as in claim 15, wherein:

said non-magnetic substrate comprises at least one material selected from the group consisting of Al, NiP-plated Al, Al-Mg alloys, other Al-based alloys, other non-magnetic metals, other non-magnetic alloys, glass, ceramics, polymers, glass-ceramics, and composites and/or laminates thereof;

said magnetically soft underlayer comprises at least one material selected from the group consisting of Fe-based alloys, Co-based alloys, and Ni-based alloys; and

said perpendicular magnetic recording layer comprises at least one magnetic material with a strong *hcp* <0002> out-of-plane growth orientation, selected from the group consisting of: Co-based alloys, CoCrPt(SiO_2), other CoPtO-containing alloys, CoCrPtB, other CoCrPt-containing alloys, and other ordered or disordered Co-based alloys, or at least one magnetic material with a strong *fcc* <111> out-of-plane growth orientation, selected from the group consisting of a multi-layer superlattice structure including a bi-layer comprising a Co-based alloy layer and a layer including at least one of Pt and Pd, a multi-layer superlattice structure including a bi-layer comprising an Fe-based alloy layer and a layer including at least one of Pt and Pd, and an L_{10} structure selected from FePt, CoPt, FePd, and CoPd materials with and without at least one alloying element.